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THE STORY OF THE PINNA
AND THE SYRIAN LAMB

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THE STORY OF THE PINNA AND THE SYRIAN LAMB.

BY BERTHOLD LAUFER.

THE Chinese Annals of the Later Han Dynasty (A.D. 25-220), in the account of Ta T'sin, ascribe asbestine cloth to the Roman Orient. The text then continues, "Further, they have a fine cloth said by some to originate from the down of a water-sheep, and they have also a stuff made from wild-silkworm cocoons."¹ The name of the former of these

¹ Hou Han shu, ch. 118, p. 4 b. The previous translators of this passage did not treat it with full justice. Hirth (China and the Roman Orient, p. 41) offered the rendering, "They further have 'fine cloth,' also called *Shui-yang-ts'ui* [that is, down of the water-sheep]; it is made from the cocoons of wild silkworms." G. Schlegel ("The Shui-yang or Water-Sheep," Actes du 8e Congrès des Orientalistes à Stockholm, 1889, p. 22) criticised this translation on some point, and himself proposed, "They have fine cloth which some say is made from the down of the water-sheep and the cocoons of wild silkworms." Chavannes (T'oung Pao, 1907, p. 183) translates, "They have, besides, a light cloth, of which some say that it is from the down of the aquatic sheep, but which in reality is fabricated from the cocoons of wild silkworms." M. Chavannes himself, however, contradicts this translation by his mode of interpretation: for he explains the cloth from the down of the water-sheep as the textiles made from the fibres of the pinna (the textiles are not styled "byssus," as stated by him), and in regard to the silk material refers to Aristotle's mention of "silks from wild silkworms on the island of Cos." In this case the two articles are entirely distinct, and it is clear that the above Chinese clause consists of two separate and co-ordinated parts. A stuff made from wild-silkworm cocoons is not capable of eliciting a tradition pertaining to a water-sheep. The latter, as plainly suggested by this name, is an aquatic product, while silk is not. That this view of the matter is correct, is solidly testified by the texts of the T'ang shu, and of Ma Tuan-lin quoted above, which speak of the water-sheep only, without any reference to wild silkworms. The text of the Wei lio (Hirth, *l. c.*, p. 71), however, is perfectly conclusive: "They weave fine cloth, saying that they utilize for this purpose the down of the water-sheep; this product is termed 'cloth from the west of the sea.' All domestic animals of this country are produced in the water. Some say that they make use not only of sheep's wool, but also of tree-bast [that is evidently flax] and the silk of wild silkworms in the production of textiles." Here the wild silkworms are separated from the water-sheep by two intervening sentences, and it is patent that the two subjects are not interrelated. — The passage of Aristotle in regard to the silkworm, to which Chavannes alludes, has frequently been misunderstood. Aristotle does not say that the animal was bred or the raw material produced in Cos: he merely

two textiles is imparted in the "Wei lio," written by Yü Huan between 239 and 265, who states, "They weave fine cloth, saying that they utilize for this purpose the down of the water-sheep; this product is termed 'cloth from the west of the sea' (*hai si pu*)."¹ The same name appears in the Annals of the T'ang Dynasty,¹ in the account of Fu-lin (Syria), where "the wool of the water-sheep is woven into cloth." Ma Tuan-lin, in his "Wên hien t'ung k'ao," completed in 1319, has the same information; but the name is altered by him into "cloth occurring in the sea" or "cloth from within the sea" (*hai chung pu*). This was presumably effected under Arabic influence; for Ibn al-Baitār calls the product yielded by the *Pinna nobilis* or *P. squamosa* "wool of the sea" (*suf el-bahr*),² and, as will be seen, after Greek model.

The failure of previous authors to explain these accounts correctly resulted from their neglect to study the corresponding traditions of the ancients regarding this matter. Bretschneider³ observed with reference to the passage in the Han Annals, "This is perhaps the byssus, a cloth-stuff woven up to the present time by the inhabitants of the Mediterranean coast, especially in southern Italy, from the thread-like excrescences of several sea-shells, especially *Pinna squamosa*." A modern condition of affairs is here invoked to account for a fact relating to antiquity; while the ancients find no place at all, and no attempt is made to explain the origin of the curious Chinese term "water-sheep." There is, moreover, a grave error in Bretschneider's statement when he designates this fabric as "byssus." Byssus, as everybody knows, was a fine tissue of the ancients, produced in the vicinity of Elis in Achaia.⁴ It is variously interpreted as cotton or flax.⁵ More probably it was the latter.⁶ At any rate, it has nothing to do with the ancient

states that a woman of Cos, Pamphila by name, daughter of Plateus, is credited with the first invention of the fabric. Only subsequent authors—as Pliny (xi, 77) and Isidorus (xix, 22, 13), who lived from 570 to 636—mention the actual occurrence of a wild silkworm on Cos (compare J. Yates, *Textrium Antiquorum*, p. 163; Blümner, *Technologie*, vol. i, 2d ed., p. 202). On the other hand, the opinion is expressed that Aristotle, in this passage, does not speak at all of a silkworm (Aubert and Wimmer, *Aristoteles Tierkunde*, vol. i, p. 162); and E. Hahn (*Haustiere*, p. 563) even goes so far as to reject, with good reason, this whole text as unauthentic. At any rate, it seems doubtful that Aristotle should have written all the unintelligible absurdities of this account. Be this as it may, the notice ascribed to Aristotle's name cannot be enlisted to explain the wild silk mentioned by the Chinese Annals as having been wrought in the Roman Orient. This kind of silk has nothing to do with Cos or *vestes Coae*, but distinctly points to what was termed by the ancients *bombycinae*,—textiles manufactured in Assyria or Syria, and obtained from a wild silkworm whose cocoons could not be reeled off, but were combed and spun. This silk (in French *galette*) possessed less gloss and fineness than the Chinese material.

¹ T'ang shu, ch. 221 B, p. 8. The T'ang dynasty ruled from 618 to 906.

² L. Leclerc, *Traité des simples*, vol. ii, p. 386.

³ On the Knowledge possessed by the Ancient Chinese of the Arabs, p. 24.

⁴ Pliny, *Naturalis historia*, xix, 4.

⁵ Blümner, *Technologie*, vol. i, 2d ed., p. 192.

⁶ J. Yates, *Textrium Antiquorum*, pp. 267-280.

textiles obtained from the fibres of the pinna. The error of Bretschneider was caused by the fact that in our zoölogical nomenclature the filaments secreted by the foot of this animal and other bivalve mollusks, and serving for attachment to fixed objects, are styled "byssi" (plural of "byssus").¹ In this sense, however, the word was not used in the language of the ancients. Notwithstanding, we are under obligations to Bretschneider for his ingenious suggestion, as it will be seen that, as a matter of fact, he was quite correct in his presentiment.

Yule² connected the water-sheep of Chinese tradition with Friar Odoric's story of the vegetable lamb of the Volga. This, however, is plainly an unmethodical procedure and a chronological *saltus mortalis*, — first, as the two traditions are widely different without an attempt on the part of Yule to explain this difference; and, second, as a Chinese tradition of the third century pertaining to the Hellenistic Orient cannot be brought into direct contact with reports of mediæval European travellers, but must be correlated with coeval Hellenistic thought. Hirth³ justly emphasized the wide gap of the chronological interval that separates the two events, but did not cope with the problem involved. Schlegel⁴ attacked it in an uncritical manner, and brought new confusions into the discussion by dragging into the tangle also the camel. It is Chavannes's⁵ merit to have clearly discriminated between the water-sheep and the so-called *Agnus scythicus* of mediæval travellers,⁶ and to have established for the former the only correct interpretation by means of the filaments of the pinna; but, in so doing, Chavannes has recourse solely to an Arabic author, Iṣṭakhri, of the tenth century, and reconstructs from his report a legend which should have given rise to the Chinese idea of a water-sheep. It is clear, however, that the Arabic as well as the Chinese traditions must be reducible to a Hellenistic tradition; and it is obvious alike that the Chinese notion which first appears in the "Wei lio" of the third century is not due to the Arabs, but received a direct impetus from Hellenism. It is therefore imperative to go straight to headquarters, and to study what the ancients themselves have to say about the pinna and its products.

¹ This bunch of silky fibres suitable for weaving projects only from one side of the animal, near the lower pointed extremity, which is fixed perpendicularly in submarine sand or rocks, the *byssus* having the function of an anchor. *Pinna* (more correctly *Pina*) is the generic name for a large family of marine mussels (*Pinnidae*), belonging to the class of *Pelecypodes*, and occurring in the Mediterranean and Indian Oceans (see P. Fischer, *Manuel de conchyliologie*, p. 963, Paris, 1887; and A. Hyatt, *Remarks on the Pinnidae*, *Proc. Boston Soc. Nat. Hist.*, vol. xxv, 1892, pp. 335–346). The species utilized by the ancients is known as *Pinna nobilis* or *P. squamosa*.

² *Cathay*, vol. i, p. LVII.

³ *China and the Roman Orient*, p. 262.

⁴ "The Shui-yang or Water-Sheep," *l.c.*, pp. 19–32.

⁵ T'oung Pao, 1907, p. 183, note 4.

⁶ It will be seen in the further course of this article, however, that an historical and inner connection between the two exists, nevertheless.

First of all, it is remarkable that the classical Greek and Roman authors, while thoroughly acquainted with the pinna as a species of edible mollusk, are entirely reticent about the employment of its filaments for textiles. This industry is foreign to the classical epoch, and does not appear before the second century A.D.; it is an offshoot of Hellenistic, not of Greek culture. Aristotle, in his treatise on zoölogy (v, 15), describes the pinna as follows: "With regard to the *limnostreae*, or lagoon oysters, wherever you have slimy mud, there you are sure to find them beginning to grow. Cockles and clams and razor-fishes and scallops grow spontaneously in sandy places. The pinna grows straight up from its tuft of anchoring fibres in sandy and slimy places. These creatures have inside them a parasite nicknamed the 'pinna-guard,' — in some cases a small carid, and in other cases a little crab. If the pinna be deprived of this pinna-guard, it soon dies." Again he says, "Some shift about from place to place, others remain permanent on one spot. Of those that keep to one spot, the pinnae are rooted to the ground. The razor-fish and the clam keep to the same locality, but are not so rooted; but still, if forcibly removed, they die." Of special importance for a consideration of the legend of the vegetable lamb (to be discussed farther on) is another passage in the same work of Aristotle (VIII, 1): "Nature proceeds little by little from things lifeless to animal life in such a way that it is impossible to determine the exact line of demarcation, nor on which side thereof an intermediate form should lie. Thus next after lifeless things in the upward scale comes the plant; and of plants, one will differ from another as to its amount of apparent vitality; and, in a word, the whole genus of plants, while it is devoid of life as compared with an animal, is endowed with life as compared with other corporeal entities. Indeed, as we just remarked, there is observed in plants a continuous scale of ascent towards the animal. So, in the sea, there are certain objects concerning which one would be at a loss to determine whether they be animal or vegetable. For instance, certain of these objects are fairly rooted, and in several cases perish if detached. Thus the pinna is rooted to a particular spot, and the solen (or razor-shell) cannot survive withdrawal from its burrow. Indeed, broadly speaking, the entire genus of testaceans have a resemblance to vegetables, if they be contrasted with such animals as are capable of progression."¹

Theophrastus² speaks of certain animals living only in others like those existing in the pinna; in another passage³ he compares the pearl-oyster of India and the Red Sea to the pinna of the Mediterranean.

¹ Smith and Ross, *Works of Aristotle*: vol. iv, *Historia animalium*, by D'Arcy W. Thompson, pp. 547 b, 548 a, 588 b (Oxford, 1910). Aubert and Wimmer, *Aristoteles Tierkunde*, vol. i, p. 155; vol. ii, pp. 112-115.

² *De causis plantarum*, II, 17, 8 (Opera, ed. Wimmer, p. 215).

³ *De lapidibus*, 36 (*Ibid.*, p. 345).

Pliny¹ describes the animal in the manner of Aristotle, emphasizing its parasite (*comes*) called the *pinoter*es or *pinophylax*, — a crustacea that really lives in shells,² and, according to the naïve notions of the ancients, helped the pinna toward its food-supply. The pinna, which is without eyesight, opens its shells, which are soon filled by small fish; the vigilant pinoter^{es} gives notice to the pinna at the right moment by a gentle bite; the bivalve closes its shell, kills the captives by this pressure, and divides its booty with the companion. Aristophanes, in his "Wasps" (v. 1511), alluded to this fable; and Aelian³ reiterates the same as a good story.⁴ Neither Pliny nor Aelian, however, alludes to any textile product obtained from the pinna; and the silence of Pliny, who is well informed on the subject of textiles, is particularly significant and conclusive. The origin of pinna textiles is therefore suspected to have taken place, not in the classical world, but in the Hellenistic Orient. The "Periplus Maris Erythraei," written between A.D. 80 and 89, lends color and support to this opinion. This Greek work mentions five times under the name *πινικόν* the textile obtained from the pinna. It must be remembered that the pinna belongs to the mussels that furnish the genuine pearl; and it is my impression that the same people who were engaged in the business of the pearl-fishery in the Persian Gulf and around Ceylon also hit upon the idea of making the best possible use of the by-product of the filaments. The technique of byssus textiles grew as a side-issue out of the pearl-industry. This is confirmed by the data of the "Periplus," which mentions the pearl-oyster of the Persian Gulf as *πινίκιος κόγχος* ("pina conch"),⁵ and the byssus textiles as *πινικόν*, being exported from the place, styled the "emporium of Apologus," and from Ommama to Barygaza, the important trading-port in the Dekkan, but inferior to those of India.⁶ The *πινικόν* is likewise a product of Taprobane

¹ IX, 42, § 142.

² Compare O. Keller, *Antike Tierwelt*, vol. ii, p. 488. According to Isidorus of Charax (in a fragment preserved by Athenæus, III, 46), this parasite lives also in the mouth of the oyster-shell (see text and translation in W. H. Schoff, *Parthian Stations* by Isidore of Charax, pp. 10-11, Philadelphia, 1914).

³ *Hist. anim.*, III, 29.

⁴ Also Cicero (*De finibus*, III, 19; and *De natura deorum*, II, 48) and Horapollon (*Hieroglyphica*, II, 108) have noted it (compare J. Beckmann, *De historia naturali veterum*, p. 239).

⁵ § 35 (ed. of Fabricius, p. 74); compare also § 59 (p. 102).

⁶ It is wrong, as translated by W. H. Schoff (*Periplus of the Erythraean Sea*, pp. 36, 46, 47), to speak in this case of "pearls;" for the pearl is called *μάργαρον*, *μαργαρίτις*, etc., and the *Periplus* itself (§ 56) styles the pearl *μαργαρίτης*. The word *πινικόν*, however, is a derivative from *πῖνα* designating the animal as a species, not any part of it. Certainly the total animal itself was not subjected to exportation, but only those portions useful in mercantile enterprise; that is, the pearls and the byssi or filaments. Consequently the term can but refer to the latter, and denotes either the raw material destined for weaving

(Ceylon; § 61), and the product is traded to a port on the Ganges (§ 63). When and exactly in what locality these textiles were first made, we have no means of ascertaining precisely; but the "Periplus," written at Alexandria toward the end of the first century, contains the earliest conspicuous allusion to their existence, and in general determines their geographical area in the Oriental sphere along the lines of Indo-Persian commerce.¹ I would not emphasize so strongly, however, the point that fine cloths of this substance were made exclusively in India, as has been done by J. Yates.² Without invalidating or corroborating this inference, we should keep in mind that nothing about such a textile is known to us from India, ancient or modern; and, in view of the deep-rooted Hindu aversion to the taking of animal life, I even have the feeling that a textile secured from an animal, whose death for this purpose was necessarily involved, could not well have been an Indian idea, at least in its origin not a Hindu invention. The unknown author of the "Periplus," not having himself visited India, can hardly be regarded as an authority on Indian subjects, unless his statements may be checked or confirmed by other sources; also his text has been handed down to us in a bad condition, and in many cases is open to doubt and conjecture. The question of the local origin must therefore be held in abeyance; and its definition, as stated, is to be restricted to the maritime expanse of the Erythrean Sea (bordered by the littorals of Arabia, Persia, and India) rather than extended to any particular territorial or ethnical group.³ It is therefore

or the ready-made woven product. Lassen (*Indische Altertumskunde*, vol. iii, p. 46), Fabricius (p. 77), and Blümner (*Technologie*, vol. i, 2d ed., p. 204), have decided in favor of the latter, and I concur with them in this opinion. Fabricius, it is true, is not wholly consistent in his interpretation, for in § 59 he renders *κολύμβησις τοῦ πινικοῦ* by "capture of pearls," and at the end of this chapter *πινικόν* by "*Steckmuschel*," whereas J. Yates (in his classical work *Textrinum Antiquorum*, *An Account of the Art of Weaving among the Ancients*, p. 158, London, 1843) upholds the meaning of byssus textiles for this very chapter (his interpretation of *σινδῶν ἐβαργαπελτις* as "fine cloth obtained from shells yielding pearls," of course, is untenable [see Fabricius, p. 104, note 1]).—In the British Museum there are two Greek bronze figures with the head of an Ethiopian, or negro, clasping a pinna which they have just brought up (H. B. Walters, *Cat. of the Bronzes in the Dept. of Greek and Roman Antiquities*, *Brit. Mus.*, p. 269, Nos. 1674, 1675).

¹ In the Greek papyri the byssus textiles have not yet been pointed out. We owe to Th. Reil (*Beiträge zur Kenntniss des Gewerbes im hellenistischen Ägypten*, pp. 116–122) a complete list of the textiles mentioned in the papyri, among which no reference to the pinna occurs.

² *Textrinum Antiquorum*, pp. 157–159, with reference to § 59 of the *Periplus*.

³ In fact, none of the Greek writers to be cited presently mentions a locality where the weaving of pinna fibres was carried on. It has commonly been said that the manufacture took place at Tarentum in southern Italy; but this statement is advanced for no other reason than that the pinna is obtained, and the fabrication principally conducted, at Taranto in modern times. There is, however, no direct evidence that this place was the seat of the ancient industry. On the contrary, as set forth above, the evidence available points to the Orient. There are now two processes of catching the pinna in the Gulf of

logical that we find the first knowledge of this material in Hellas during the second century, where it had meanwhile apparently arrived from the Orient.

The first Greek author to testify to the fabrication of textiles from the pinna fibres is the sophist Alciphron of the second century, who, in the collection of his letters,¹ styles them "woollen stuffs out of the sea" (τὰ ἐκ τῆς θαλάσσης ἔρια).² The principal wool-furnishing animal of the ancients was the sheep; and the term used by Alciphron is either the index of a belief existing at that time in a marine sheep that furnished the wool of the pinna, or directly responsible for the formation of such a notion. The same idea turns up in Father Tertullian (born about A.D. 160; according to others, *circa* 155–*circa* 222), who, speaking of the materials used in weaving, observes, "Nor was it enough to comb and to sow the materials for a tunic. It was necessary also to fish for one's dress; for fleeces are obtained from the sea where shells of extraordinary size are furnished with tufts of mossy hair."³ The Chinese terms "water-sheep" and "cloth from the west of the sea" (or "cloth from within the sea") and the Arabic designation "wool of the sea"⁴ are immediately to be connected with the descriptions of Alciphron and Tertullian, and present the outflow of that Hellenistic tradition which inspired their statements. The water-sheep of the

Taranto,—by diving and by fishing. The latter method is performed by means of the *pernonico*, which consists of two semicircular bars of iron fastened together at the ends. At one end is a wooden pole; at the other end, a ring and cord. The fishermen bring their boat over the place where the pinna is seen through the clear water, let down the *pernonico*, and, having loosened the pinna by embracing it with the iron bars and twisting it round, draw it up to the boat (compare J. Yates, *Textrinum Antiquorum*, pp. 152–154). According to P. Petròcchi (*Novo dizionario della lingua italiana*, vol. ii, p. 316, Milano, 1902), large quantities of the filaments are gathered on the coasts of Sardinia, under the name *nàcchera* or *pelo di nàcchera*.

¹ *Epistolae*, I, 2, 3 (Hercher, *Epistolographi Graeci*, p. 44, Paris, 1873).

² Compare Blümner, *Technologie*, vol. i, 2d ed., p. 204; and O. Keller, *Antike Tierwelt*, vol. ii, p. 549. In the ancient Glossaries we find *πλυννον* in the sense of *marinum*, that is, *vellus marinum* ("sea-wool"); and *pinnosum* = *laniosum*.

³ Nec fuit satis tunicam pangere et serere, ni etiam piscari vestitum contigisset: nam et de mari vellera, quo mucosae lanusitatis plautiores conchae comant (Liber de pallio, III, *Patrologia latina*, ed Migne, vol. ii, col. 1093). I have adopted the translation of J. Yates, *Textrinum Antiquorum*, p. 155. Tertullian's treatise *De pallio* contains a defence of his wearing the pallium instead of the toga, and belongs to the group of his works which were written later than the year 208.

⁴ This term is certainly older than the time of Ibn al-Baiṭār (1197–1248), who merely was a compiler and translator, and who derives his notes on the pinna from "the book called 'er-Rihla.'" *Rihla* (that is, "The Voyage") was the work of al-Baiṭār's teacher, Abu'l Abbās, styled en-Nebāti ("the Botanist"), born in Sevilla, where he died in 1239. He traversed Spain as a collecting botanist, extended his excursions into Arabia, Syria, and Irak, and laid down the results of his explorations in the work mentioned, which is unfortunately lost, and only preserved in the citations compiled from it by al-Baiṭār (see the introduction of L. Leclerc, *Traité des simples*, vol. i, p. v).

Chinese records is by no means a Chinese invention, but the spontaneous reproduction of a popular term current in the Hellenistic Orient. It was there that the raw material employed in the textile products yielded by the pinna filaments was styled "water (or marine) sheep," or "marine wool," — a mental process suggested by the same spirit that nicknamed "goats" the close-textured sponges which are particularly hard and rough.¹ The Italians still call the fibres *lana pesce* or *lana penna*; that is, "fish wool," or "pinna wool."

Basilus the Great (Basilios Megas, 329 or 331–379), Bishop of Caesarea in Cappadocia, in one of his homilies, dilates on the wonders of the sea, pointing to the coral which grows in the water as an herb, but, taken up into the air, assumes the solidity of stone; and to the pearl which is hidden in an animal of low order, yet is craved by the treasuries of kings, the oyster-shells being scattered around along coasts and rough rocks. On this occasion he speaks also with admiration of "the pinna's raising a golden fleece which none of the dyers was hitherto able to imitate."² Another Greek ecclesiastic writer³ even says that the product of the pinna is superior to sheep-wool. The Byzantine historian Procopius of the sixth century, in his work "Ctismata," dealing with the buildings executed or restored by the Emperor Justinian,⁴ informs us that Armenia was governed by five hereditary satraps, who received their insignia from the Roman Emperor. Among these was a chlamys made from wool, — not from the wool, however, obtained from sheep, but from wool gathered out of the sea. The animals in which the outgrowth of the wool originates are usually styled *pinnoi*.⁵ Accordingly the notion of marine fleece, and comparison of it with sheep-wool, were constantly awake in the minds of Greek authors. The description of the wool as "gold-colored" by Basilus answers the facts.⁶

Of Arabic authors, we owe the most interesting description of the pinna to Abu'l Abbās, to whom reference has already been made. This author, though to a certain extent under the influence of Greek tradition, as shown by his term "marine wool," evidently speaks from personal observation enriched by information gathered during his travels. We shall revert to his account later, in another connection.

¹ Aristotle, *Hist. anim.*, v, 16 (fol. 548 b).

² *Πόθεν τὸ χρυσοῦν ἔριον αἱ πίνναι τρέφουσιν*, ὅπερ οὐδεὶς τῶν ἀνθοβαφῶν μέχρι νῦν ἐμίμησατο (*Homilia vii in Hexaemeron*; *Patrologia*, ed. Migne, vol. xxix, col. 161).

³ Cited by Blümner, *Technologie*, vol. i, 2d ed., p. 204, note 8.

⁴ *Περὶ κτισμάτων*, III, 1 (written after 558).

⁵ *Σλαμὺς ἡ ἐξ ἐρίων πεποιημένη, οὐχ οἷα τῶν [προβατίων] ἐκπέφυκεν, ἀλλ' ἐκ θαλάσσης συνειλεγμένων πίννων τὰ ζῶα καλεῖν νενομίκασι, ἐν οἷς ἡ τῶν ἐρίων ἔκφυσις γίνεται.*

⁶ There is a muff of dark gold color, made from byssus-fibres at Taranto, in the collections of the Field Museum; also a pair of gloves and a cap knitted from the same material. The latter specimens have a dull cinnamon-brown color, without gloss.

The oldest Arabic account of byssus textiles, already pointed out by Chavannes, is that of Iṣṭakhri, who wrote about 951. His story, according to M. Reinaud's¹ translation, is worded as follows: "At a certain period of the year an animal is seen running out of the sea and rubbing itself against certain stones of the littoral, whereupon it deposes a kind of wool of silken hue and golden color.² This wool is very rare and highly esteemed, and nothing of it is allowed to waste. It is gathered and serves for the weaving of tissues that are now dyed in various tinges. The Ommayad princes who then ruled at Cordova reserved for themselves the use of this wool; only surreptitiously a small portion of it may be abstracted. A robe made of this wool costs more than a thousand gold-pieces." The same story is repeated by Qazwīnī (1203-83), who localizes it at Santarem, a city in Spain on the Tajo, near Bāga on the coast of the sea: "One of the wonders of this sea is what is told regarding a certain animal which there comes out of the water to rub itself on the shore, whereby its hair falls out; these have the color of gold and the softness of *khezz*.³ These are rare and highly esteemed, for which reason the people gather them and weave them into clothes. The kings prevent their exportation, which can be done but secretly. The value of a garment amounts to more than a thousand gold-pieces owing to its beauty and rarity." Maqdisī has exactly the same notice as Qazwīnī, but adds a new name for the animal in the form *abū qalamūn*, which is derived from Middle-Greek ὑποκάλαμον, and says that the garments glitter in different colors on the same day.⁴

The most curious development of the Arabic notions regarding byssus textiles was that these were ultimately taken for the plumage of a bird,

¹ Géographie d'Aboulféda, vol. ii, pt. 2, p. 242. The text is in De Goeje, Bibl. Geogr. Arab., p. 42; it has been translated also by Dózy, Supplément des dict. arabes, p. 853.

² This, of course, is a fabulous story, the *raison d'être* of which will be discussed below. In fact, the shells must be opened, and the filaments are cut off from the gland. When the bottom of the sea is sandy, the shell with its bunch of silky fibres may easily be extracted; but in rushy and muddy sea-bottoms they stick so fast as to be generally broken in being drawn up. In Italy the "wool" is twice washed in tepid water, once in soap and water, and again in tepid water, then spread on a table to dry. While yet moist, it is rubbed and separated with the hand, and again spread on the table. When quite dry, a wide comb of bone is drawn through it; afterwards this process is repeated with a narrow comb. The material destined for very fine work is combed also with iron combs called *scarde* (cards). It is then spun with a distaff and spindle. The threads are now almost universally knit, a technique unknown to the ancients (compare J. Yates, *Textrium Antiquorum*, pp. 154-155).

³ According to G. Jacob (*Handelsartikel*, pp. 45-47), furs of the beaver, and also the name for a silken material. It seems to me that this word is the result of a fusion of two originally different words (compare Hindustani *kesh* ["hair"] and *khaz* ["filoselle silk"]) and H. Blochmann's note in his translation of *Ain I Akbari* [vol. i, p. 92]).

⁴ G. Jacob, *Studien in arabischen Geographien*, vol. ii, pp. 60, 61. The Arabic-Greek word is evidently connected with the name "chameleon."

and that a bird species was construed which was alleged to yield the product of the pinna. Qazwīnī opens his chapter on ornithology with the description of a bird, styled *abū barāqish*, "being of fine shape, of long neck and feet, with a red bill, and of the size of a stork; every hour its plumage glitters in another color, — red, yellow, green, blue. In imitation of the color of this bird are woven garments styled *abū qalamūn* and exported from the land of the Romaei. Only for its color and shape this bird is noteworthy; of its functions and the medical properties of its parts nothing has come to my knowledge."¹ It is no wonder that, as said by Jacob, even Damīrī did not know what kind of bird should be understood by *abū barāqish*;² for, in my opinion, this bird is plainly fictitious, and reconstructed on the basis of real and alleged byssus textiles. How and why this was accomplished is obvious also. There are linguistic and commercial reasons for this metamorphosis. The word *pinna* (properly *pina*), the name for the bivalve in question, is likewise the classical Latin form for the subsequent word *penna* ("feather"),³ and this ambiguity may have given rise among the Arabs to the conception of the filaments of the pinna as bird-plumage, — a conception easily furthered by the strong mutual resemblance of the two substances. Abu'l Abbās,⁴ in his description of the pinna, says that it terminates in a point resembling the beak of a bird. On the other hand, as stated by Qazwīnī, textiles obtained from the pinna were exceedingly scarce, made stealthily, and were a sort of royal prerogative. Their exorbitant price was prohibitive to the masses. Feather fabrics were accordingly passed off as byssus weavings, and a wonderful bird was invented to boom the sale of this product. The real existence of such feather fabrics in western Asia is attested by Chinese sources.⁵ Such makeshifts must have been in vogue as

¹ G. Jacob, *Studien in arabischen Geographien*, vol. ii, p. 97.

² Damīrī says that it is a certain bird like the sparrow, assuming various colors, and that it is applied to a changing and variable disposition (A. S. G. Jayakar, *Ad-Damīrī's Hayāt al-Hayawān*, vol. i, p. 352, Bombay, 1906). This description is difficult to reconcile with Qazwīnī's stork.

³ In modern Italian the words *penna* and *pinna* are interchangeable.

⁴ L. Leclerc, *Traité des simples*, vol. i, p. 387.

⁵ The Arabic word *suf* ("wool" or "down") that we met in the term *suf el-bahr* ("marine wool") for the byssus of the pinna, passed from the days of the Mongol period into the Chinese language in the form *su-fu* or *so-fu* (variously written; see Watters, *Essays on the Chinese Language*, p. 355). In the *Annals of the Yüan Dynasty* (Yüan shi, ch. 78) it is mentioned as the cloth worn by the grandsons of the sovereign, and described as the finest of the woollen fabrics of the Mohammedans. The *Geography of the Ming* (Ta Ming i t'ung chi, ch. 89, fol. 24 a, ed. of 1461) defines *so-fu* as a textile made from bird's-down with designs as found in open-work, variegated silk (compare Bretschneider, *Mediæval Researches*, vol. ii, p. 258). An author, Chu Tsê-min, ascribes *so-fu* also to the country Fu-lin (Syria), saying that it is made from twisted hair which is dyed a dull green, and that on being washed it does not fade out (Ko chi king yüan, ch. 27, p. 16 b). *So-fu* was sent to China from Samarkand in 1392, from Ispahan in 1483, and from Lu-mi (Rum, Byzance)

early as the ninth century, in the time of Iṣṭakhri; for this author's statement that the pinna textures were then dyed in various colors is highly suspicious. A genuine pinna stuff would most assuredly not have been subjected to this vandalizing process, apt to destroy its original appearance. The Greek authors insist on the golden color and the silky quality of the byssus of the pinna, and these properties constituted the merit of the fabric for the sake of which it was craved. Basilius the Great, Bishop of Caesarea in the fourth century, accentuated the fact that none of the dyers could imitate the golden wool raised by the pinna; and a Syriac work wrongly ascribed to Aristotle, dealing with objects of natural history and partially based on Basilius' writings, says still more explicitly that "there are no dyers so clever in their work that they could accomplish something similar after the model of the colors of the pinna."¹ These passages show that from

in 1548 and 1554 (Bretschneider, *l.c.*, pp. 258, 291, 308). The feather fabrics *suf*, therefore, seem to have been in vogue in the Byzantine Empire and Persia. Dr. A. Yohannan, lecturer at Columbia University (a Persian by birth), told me that he himself had seen in Persia the manufacture of these textiles from bird's-down. The same industry is met with among the tribes of the Hindu Kush. We owe this information to J. Biddulph (Tribes of the Hindoo Koosh, p. 74, Calcutta, 1880): "A curious kind of cloth is sometimes woven out of bird's-down. That of wild fowl and of the great vulture is most generally used. The down is twisted into coarse thread, which is then woven like ordinary cloth. Robes made of it are very warm, but always have a fluffy uncomfortable look, suggestive of dirt. They are made only in the houses of those in good circumstances." It should not be supposed, however, that the Chinese made the first acquaintance with feather fabrics in consequence of their trade with Arabs and Persians. Such were indeed manufactured in China from ancient times, though we are ignorant of the technique employed, which may have been different from that practised in western Asia. In a study of asbestos and the salamander (to be published in the T'oung Pao) the writer has shown that this industry played a signal rôle also among the aboriginal tribes of southern China. In view of the fact that it is widely distributed in ancient America, it would be an important task to study in detail the exact history and the geographical and ethnographical diffusion of the industry in Asia (my reference, of course, is strictly applied to the use of feathers for weavings, not for mosaics or any other ornamental purpose). For the benefit of Orientalists not familiar with the literature on America, the following brief indications may serve as an aid to preliminary information. Franz Boas (Second General Report on the Indians of British Columbia, p. 14, in Sixth Report on the North-Western Tribes of Canada, 1890) states, in regard to the Lkufigen tribe on Vancouver Island, "Blankets are woven of mountain-goat wool, dog-hair, and duck-down mixed with dog-hair. The downs are peeled, the quill being removed, after which the downs are mixed with dog-hair. A variety of dogs with long white hair was raised for this purpose; it has been extinct for some time. The hair which is to be spun is first prepared with pipe-clay." W. H. Holmes (Prehistoric Textile Art, Thirteenth Annual Report, Bureau of Ethnology, p. 27) observes, "Feather work was one of the most remarkable arts of the natives of Mexico and other southern countries at the period of the conquest. The feathers were sometimes woven in with the woof and sometimes applied to a network base after the fashion of embroidery. Rarely, it may be imagined, were either spun or unspun fabrics woven of feathers alone." Compare further W. Hough, Culture of the Ancient Pueblos of the Upper Gila River Region (U. S. Nat. Mus. Bull. 87, pp. 71-72, Washington, 1914).

¹ Syriac *pūnōs*. See K. Ahrens, *Buch der Naturgegenstände*, p. 75.

the fourth century onward dyers had indeed attempted to produce imitation pinna stuffs, but that their efforts were unsuccessful; certainly they did not utilize byssus in these experiments, but some other inferior fabric of a similar appearance. In the ninth century these reproductions had evidently advanced beyond the experimental stage, and deluded the public. The dyed byssus fabrics mentioned by Istakhri, indeed, are makeshifts, and as shown by Qazwīnī, in all likelihood, must have been textiles woven from bird's feathers. This is borne out also by Maqdisī's statement that the garments glitter in different colors on the same day, which is true only of feather fabrics, not, however, of byssus textiles. The latter do not glitter at all, but have a uniform gold-brown or dull-cinnamon hue. The fact that woven bird's-plumage represents a very close resemblance to pinna tissues may be gauged from Chinese descriptions of feather weavings, in which almost the same descriptive elements are used as by the Arabic authors in their references to pinna. A few examples may be cited from Chinese records. In the period Shang-yüan (674-676) of the T'ang dynasty, the Princess Ngan-lo¹ had two skirts made in the Shang-fang.² They were woven from the down of various kinds of birds. When viewed in front, the weaving presented a definite color; when viewed sideways, another color; when viewed in the sunlight, again another color; and when viewed in the shade, again a diverse color; while the forms of the various birds were visible in the skirts. One of these she presented to the Empress Wei.³ The "Lang huan ki," a work of the Mongol period, contains the following: "Phoenix-feather gold (*fêng mao kin*) means the feathers growing beneath the neck of the phoenix; they are like ribbons and glittering like gold, being matchless and as fine and soft as silk floss. In the spring the feathers drop to the foot of the mountains. The people gather them and weave them into gold brocade that bears the name 'phoenix-feather gold.' At the time of the Emperor Ming (713-755) people of the country brought such feathers as tribute, and many garments were adorned with them in the palace; at night they emitted a brilliant light. Only Yang Kuei-fei⁴ was presented with a sufficient quantity to have them made into a dress and a screen, dazzling like sunlight."⁵

¹ A daughter of the Emperor Chung-tsung; she died in 710 (Giles, *Biographical Dictionary*, p. 3).

² The imperial factories supplying the wants of the reigning house.

³ Kiu T'ang shu, ch. 37, p. 13.

⁴ The favorite court-lady of the Emperor Ming, who died in 756 (Giles, *Biographical Dictionary*, p. 708).

⁵ The text is in T'u shu tsi ch'êng, IV, 197, kung hien pu ki shi 3, p. 1 b. — D. J. Macgowan (*American Journal of Science and Arts*, 2d ser., vol. xviii, 1854, p. 156) mentions women's jackets composed of the feathered head-skins of peacocks, made in Shen-si. He describes the prevailing tints of these garments as green and blue, of resplendent metallic lustre, of varying intensity, mutually changing into each other, or shotted according as the light falls upon them in different directions.

In the Annals of the T'ang Dynasty (618-906) we meet another tradition, which at first sight is widely different from the older story of the water-sheep, but on closer examination proves to be an interesting continuation or further development of it. This new tradition hailed from the country of Fu-lin (Syria, with the probable inclusion of Byzance), as the former came from Ta Ts'in, the Hellenistic Orient, and is worded as follows: "There are lambs engendered in the soil. The inhabitants wait till they are going to sprout, and then build enclosures around as a preventive measure for wild beasts that might rush in from outside to devour them.¹ The umbilical cord of the lambs is attached to the soil, and when forcibly cut off, they will die. The people donning cuirasses and mounted on horseback beat drums to frighten them. The lambs shriek from fear, and thus their umbilical cord is ruptured. Thereupon they set out in search of water and pasture."²

Chavannes³ has been so fortunate as to discover an earlier version of this legend in the commentary which Chang Shou-tsie published in 737 on the historical memoirs of Se-ma Ts'ien. This author cites the "I wu chi" of Sung Ying as follows: "In the north of Ts'in, in a small canton dependent on it, there are lambs spontaneously engendered in the soil. Awaiting the moment when they are ready to sprout, the people build enclosures around them, for fear lest they might be devoured by wild beasts. Their umbilical cord is attached to the ground, and its forcible cutting will cause the animal's death. Instruments are therefore beaten to frighten the lambs which shriek in terror, so that the umbilical cord breaks. Thereupon they set out in search of water and pasture, and form herds." This version has doubtless emanated from the same source as that of the Old T'ang Annals, with which it substantially agrees, except that the equestrian

¹ "Shepherds in the East lead a lonely and romantic life. They wander with their flocks far from human habitations, in order to bring them to pasture, and also because it is necessary for them to watch over them by night, to protect them from wild beasts. The sheep are usually on these occasions driven into a fold which is merely a space enclosed with a loose stone wall. Sometimes, where possible, a cave is selected. A doorway is formed in the boundary wall where one exists" (H. C. Hart, *Animals mentioned in the Bible*, p. 196). In the same manner the sheepcotes of the ancient Israelites appear to have been open enclosures walled round, in which the sheep were guarded from the scorching heat at noon and from beasts of prey at night (Numbers xxxii.16; 2 Samuel vii.8; Jeremiah xxiii.3; John x.1-5).

² Kiu T'ang shu, ch. 198, p. 12. In the New Annals of the T'ang (Sin T'ang shu, ch. 221 B, p. 8) the following version is given: "In the northern districts there are sheep growing in the soil, their umbilical cord rooting in the ground and causing their death when cut. It is therefore the practice to gallop around on caparisoned horses and to frighten the animals by beating drums. Their umbilical cord is thus ruptured, and they set out in search of water and pasture, without being able, however, to form flocks (or, they are not gregarious)."

³ T'oung Pao, 1907, p. 183.

feat of the armored shepherds is lacking. Further, the locality is not laid in Fu-lin, but in the north of Ts'in. Obviously we have to make a slight emendation in the text, and to read "Ta Ts'in" in lieu of plain "Ts'in," which would consequently carry this version also into western Asia. That this conjecture is correct, is visible from two other texts. Ma Tuan-lin has reproduced the passage of Chang Shou-tsie, and arrayed it in the chapter on Ta Ts'in:¹ consequently Ma Tuan-lin must have encountered the reading "Ta Ts'in" in the edition of Chang which was before him.² Further, the "Pei hu lu," written by Tuan Kung-lu about 875,³ explicitly naturalizes the same story in Ta Ts'in.⁴ It is therefore possible that the oldest version of the legend, when it first penetrated into China, was labelled as originating from Ta Ts'in; that is to say, that it was transmitted to China before the beginning of the sixth century, when the name "Fu-lin" made its début.

I propose to examine this curious legend without any bias toward speculations which have previously been advanced. It is obvious that any rationalistic explanation evolved from our mind cannot render it justice, but that it must be explained from the thought developments of Ta Ts'in and Fu-lin. The failure of the former efforts is chiefly due to the neglect of this regard to cultural environment. The understanding of an idea generated in Ta Ts'in or Fu-lin cannot be approached by having recourse to a rumor of mediæval travellers, or still more recent authors, pertaining to totally different localities.

The student of folk-lore and the trained observer will be conscious of two points,—first that the germ of a fact or observation relative to natural history underlies the legend; and, second, that, as not all its constituents can satisfactorily be explained from natural events, it must have been construed with a certain end in view, which may have an allegorical purport or religious cause. Let us first discuss the zoölogical background. It is the question of a certain peculiar kind of

¹ Hirth, *China and the Roman Orient*, pp. 79, 115.

² As Ma Tuan-lin joined this story to his chapter on Ta Ts'in, he naturally suppressed the addition "Ta Ts'in" in the beginning of the story, but otherwise opened it exactly in Chang's words, — "in a small canton dependent on it in the north." The only divergences in Ma Tuan-lin's text are the omission of the phrase that the lambs shriek in terror, and the alteration at the end, "they do not form herds," — the latter point in agreement with the text in the *Sin T'ang shu*.

³ Pelliot, *Bull. de l'Ecole française*, vol. ix, p. 223.

⁴ The version of this work, which is in *T'u shu tsi ch'êng* (section on sheep, *hui k'ao* 2, p. 16 b), has heretofore not been utilized for the study of the legend. Besides the specific definition of Ta Ts'in, it has another interesting feature, inasmuch as it entitles the animal "earth-born sheep" (*ti shêng yang*) from which the lamb originates. The text runs thus: "In Ta Ts'in there is the earth-born sheep. Its lamb is born in the earth. The inhabitants build enclosures all around the lambs. Their umbilical cord is attached to the soil, and when forcibly cut, the animal will die. By means of equestrian stunts and drum-beating they frighten the lambs, that shriek from fear when their umbilical cord breaks off. Thereupon they set out in search of water and pasture."

lamb¹ (the word is used advisedly) characteristic of Fu-lin (Syria), and formerly also of Ta Ts'in (the Roman or Hellenistic Orient). The growth of this lamb is described in terms referring partly to a plant and partly to an animal. The primordial generation in the soil evidently is derived from the planting of a seed.² The word *mêng* ("to sprout, shoot forth") used in the Chinese text is exclusively employed in regard to vegetation, never to fauna. Fields as well as flocks may be safeguarded by fences, but only the latter for protection from raids of wild beasts, that as a rule are not interested in the crops. Again, the umbilical cord is an animal organ, and plants are not impressed by the beating of drums. From that act of release onward, the creature retains its pure animal character to the end. We need not for a moment trouble our thoughts about the question of the "to be or not to be" in nature, of such a being. This point of view is immaterial; while the issue at stake is whether a zoöphyte of this peculiar character and description existed in the scientific knowledge or popular lore of the Hellenistic Orient. Indeed, it existed, and has already been introduced to us by Aristotle, in his "History of Animals" (VII, 1) quoted *in extenso* on p. 106. In this passage the father of all zoölogical science dilates on the boundary-lines between plant and animal life, where the plant ascends toward the animal, and the animal descends toward the plant. At this point, according to Aristotle, it is difficult to discriminate with absolute certainty between animal and plant; and he cites as illustration of this doctrine the example of the pinna, which, devoid of motion, is rooted like a plant to a fixed spot, and must perish when detached from its intrenchment. That the pinna was conceived during the Hellenistic epoch as a wool-furnishing sheep, has already been demonstrated with sufficient evidence from both the Hellenic and Chinese camp. Thus we are enabled to grasp an essential point of our legend: the lamb engendered in the soil and firmly attached to it by means of its umbilical cord, which when forcibly cut off will cause the animal's death, represents a metamorphosis of the biological condition of the pinna, as described by Aristotle, — the umbilical cord which befits a mammal taking the place and being the transformation of the byssus.³ It is needless to insist on the fact that Aristotle was the great

¹ Only the Sin T'ang shu speaks of sheep.

² The verb *shêng* of course is not conclusive, as it is used with reference to both plants and animals. Hirth and Schlegel take it in the sense of "to grow," which is not necessary; Chavannes more correctly translates "*naissent dans le sol*." The word plainly refers to the very initial stage in the formation of the organism; Pliny would say in this case "*nascuntur in terra*."

³ There is accordingly a positive historical interrelation of the water-sheep of old and the vegetable lamb, which Chavannes (T'oung Pao, 1907, p. 183) has denied, merely on the ground that in the case of the latter the question is never of water. The lack of the attribute "water," however, does not constitute a fundamental or characteristic diver-

universal teacher of natural history to all subsequent generations, and that his works translated into Arabic were worshipped like a fetich in the Orient.¹ How the further elements of the legend were formed we are allowed to recognize from the accounts of the Arabs. We remember that Iṣṭakhri and Qazwīnī relate the story regarding the pinna, that at a certain time of the year it comes out of the sea and deposits its wool by rubbing itself against the rocks of the shore. Consequently the belief prevailed that the pinna was not deprived of its

gence, but is merely a chronological difference due to the further development of the legend. In the Hellenistic stage of development correlative with the Han epoch the matter was still fairly rational, the pinna being regarded as the water-sheep, in the manner rather of a metaphorical expression than of a palpably convincing notion of reality. Yet beliefs spread and grow, and in the fifth or sixth century the basic origin was forgotten; the water-sheep, owing to its equipment with a navel, the seat of its life, then could no longer be believed to exist in the sea, but was wrested from the watery element to be transplanted into solid land and to grow into a veritable, full-fledged ovine species equipped with phenomena of plant-growth. According to the nature-philosophy of the ancients, there was no difficulty in associating an umbilical cord with the life of plants: not only was this organ compared with the root of a plant, but also the stalks of tree-fruits, particularly the figs, and the germs of seeds were straightway called *ὀμφαλός* or *umbilicus* (the evidence is collected by W. H. Roscher, "Omphalos," pp. 7-8, *Abhandl. sächs. Ges. d. Wiss.*, vol. xxix, No. 4, 1913; and R. Meringer, *Wörter und Sachen*, vol. v, 1913, p. 63; compare also the same journal, vol. vi, 1914, p. 144; both Roscher and Meringer, in their admirable studies of *Omphalos*, have neglected the legend in question, which we trust will furnish them with additional material in the prosecution of their highly interesting researches). On the other hand, Aristotle (*Hist. anim.*, I, 54) designates the animal *Omphalos* as the "root of the abdomen" (*μετὰ δὲ τὸν θώρακα ἐν τοῖς προσθίοις γαστήρ, καὶ ταύτης ῥίζα ὀμφαλός*). There is a still deeper reason to be discussed below as to why the water-sheep was ultimately transformed into a land-animal.

¹ In general, compare the interesting essay of William M. Sloane, "Aristotle and the Arabs" (*Classical Studies in Honor of Henry Drisler*, pp. 257-268, New York, 1894). It has already been demonstrated by H. E. Stapleton, one of the most successful students of Arabic alchemy (in his treatise "Sal-Ammoniac: a Study in Primitive Chemistry," *Mem. As. Soc. of Bengal*, vol. i, 1905, pp. 28, 36), that one of the essential features of this science, inherited from Greek alchemy, was the re-establishment of a belief in the strong interrelation of animals, plants, and minerals; in the paramount unity of the world of nature. "No strict line of demarcation separated plants and minerals from animals and man; all were looked upon as closely related units of a single whole." Stapleton quotes two characteristic examples from Berthelot's *La Chimie au moyen âge*. A Syro-Arabic text of the tenth or eleventh century says, "We can bring it about that a vegetable turns into an animal, and that an animal produces another animal. Take, for example, hair. When human hair putrefies, after a time it becomes a live snake. In the same way, the flesh of an ox changes into bees and hornets; an egg beomes a dragon; the raven engenders flies. Many things, by the process of putrefaction and transformation, engender animal species. From the putrefaction of plants originate certain animals." According to the Arabic alchemist Tughrāī, who died in 1121, seeds are produced by planting the horns of hoofed animals. Still older examples are found in the *Kitāb al-Hayawān* of al-Gāhiz, who died in 869; he discussed the origin of flies from beans, vermin from ordure, wasps from the marrow of palms, etc. (E. Wiedemann, "Zur Alchemie bei den Arabern," *Journal für praktische Chemie*, vol. 76, 1907, p. 73).

byssi through human agency, but voluntarily abandoned them, thus saving its own life. For another and still more specific statement of the case we are indebted to the Arabic botanist and traveller Abu'l Abbās, who died in 1239 at Sevilla, and who says in his work "Rihla,"¹ "The inhabitants of the shores where the pinna is caught told me that a marine animal, a crustacea, captures this mollusk; that it spies the latter in the low water as soon as the pinna lets its wool escape; that it then pounces down upon the pinna and subsists on it to the exclusion of every other animal." This story opens our eyes to another feature of the Chinese legend: the frightening of the lamb on the part of men who don cuirasses with the intention of enforcing the rupture of the lamb's umbilical cord through a psychological process operating in the lamb's mind. In the original animal fable these cuirassed men were crustacea, the shelly crusts of which were subsequently transmuted into cuirasses; they terrified the pinna, which, taken aback at the sight of the enemy, dropped its byssi. These byssi drifted ashore, where they were picked up by men for the purpose known to us. The essence of the Chinese story, as far as it is originally founded on a pure animal fable, is therefore not difficult to reconstruct: it is based on the alleged struggle between pinna and crab, combined with Aristotle's discussion of the pinna's biological functions. In the Chinese version, moreover, the idea crops out that the wool of the dead lamb is useless, that while alive the lamb must be shorn. The story as recorded by the Chinese, certainly, — and in view of the accuracy of the Chinese we have no reason to question this point, — is an exact reproduction of the legend as it was current in the Orient. If the pinna was there identified with a sheep or lamb, it was entirely natural that the belief should develop that byssus-wool, in like manner as sheep-wool, could not be secured from the slain animal; and the animal, to the way of thinking in that community, would have been killed by the act of depriving it of its wool, the wool being the same as the byssus identified with an umbilical cord. For this reason it was necessary to devise a process by which the creature could be induced to give up the prized wool of its own accord; and this *rôle*, in popular imagination, was assigned to the crab. The Chinese legend, as recorded in the T'ang Annals, is therefore capable of the following retranslation or re-interpretation: "A peculiar animal of Fu-lin is the pinna (lamb), whose life is bound to the soil. The inhabitants wait till the animal, which has the nature of a plant and is devoid of motion, is going to sprout, and guard it by enclosures from attacks of rapacious beasts. The byssus (umbilical cord) of the pinna (lamb) is firmly rooted in the ground; and when forcibly detached, the animal will die. It is much terrorized by the crab, which hunts it for food. At the sight of this armored adversary,

¹ Quoted by Ibn al-Baiṭār (L. Leclerc, *Traité des simples*, vol. ii, p. 386).

the pinna, stricken with fright, sheds its byssi, which in this manner do not lose their vitality. The byssus-wool thus drifts ashore, where it is gathered by men to be woven into cloth." Now, the further development was that the pinna-lamb, when once rescued from the sea, was finally landed as a realistic lamb, whose wool was directly craved by men: so man remained no longer a mere looker-on, but actively took a hand in the game and elicited the wool. Our Chinese version of course is incomplete, or perhaps merely forgetful, in not alluding to the utilization of the wool; but this is certainly the purport of the musical performance. The animal is liberated from its vegetal existence and becomes a live lamb able to roam about for water and pastures; and then, certainly, man would shear it to secure its wool.

We have noted that the pinna of old was transformed into a sheep, a lamb, and even a bird; but this is not all. It was even conceived as a human being, and an intimation to this effect is given in the Talmud.¹ In the Mishna *Kilaim* (VIII, 5), a portion of the Talmud, we meet the passage, "Creatures called *adne sadeh* ('lords of the field') are regarded as beasts." Rabbi Simeon, who died about 1235, comments on this statement as follows: "It is asserted in the Jerusalem Talmud that this creature is the 'man of the mountain.' It draws its food out of the soil by means of the umbilical cord: if its navel be cut, it cannot live. Rabbi Meir, the son of Kallonymos of Speyer, has added these remarks: 'There is an animal styled *Yedua*,² with the bones of which witchcraft is practised. It issues from the earth like the stem of a plant, just as a gourd. In all respects, the *yedua* has human form in face, body, hands, and feet. No creature can approach within the tether of the stem, for it seizes and kills all. As far as the stem (or umbilical cord) stretches, it devours the herbage all around. Whoever is intent on capturing this animal must not approach it, but tear at the cord until it is ruptured, whereupon the animal soon dies.'" The coincidence of this legend with that of the Chinese is very striking, but the novel feature cropping out in the Palestinian Talmud is the identification of the strange creature with a human being, the "man of the mountain." Who is this mysterious man of the mountain?

The Chinese version of the legend hailed from Syria (Fu-lin). At the time when it was learned by the Chinese, Syria was a Christian country, and the guess therefore is plausible that the old Hellenistic story of the water-sheep had been modified there under the influence of Christian allegory. The most surprising alteration of the Syrian

¹ The Talmudic texts, on the ground of information furnished by H. Adler, have been reproduced by H. Lee (*The Vegetable Lamb of Tartary*, pp. 6-8, London, 1887), to whose work we shall come back. The same material had already received intelligent discussion from L. Lewysohn (*Zoologie des Talmuds*, pp. 65, 356-358, Frankfurt, 1858).

² According to the nature of Hebrew writing, in which only the consonants are fixed, the vocalization of this word, of course, is uncertain.

redaction is the substitution of the lamb for the sheep; and the Chinese term *yang kao* is so specific and intentionally chosen, that the Chinese without any doubt have reproduced correctly and exactly what Syrian tradition intended. The lamb among Christendom was the symbol of the Savior, Agnus Dei (John 1.29); and the lamb that according to the Talmud is the "man of the mountain" unquestionably represents an allusion to the "Divine Lamb standing on Mount Sion" (καὶ εἶδον, καὶ ἰδὼν ἀρνίον ἐστηκὸς ἐπὶ τὸ ὄρος Σιών. — Revelation XIV.1). Thus the Lamb is represented in Christian art from the fourth century onward.¹ While this symbolism may well be hidden under the story of the Syrian Lamb, it is obvious, on the other hand, that it is incapable of explaining in full the whole gist of the legend. It is inconceivable that Christ should have been conceived as a lamb immovably rooting in the soil, and liberated by the action of the mounted shepherds. It remains to be considered that prior to the fourth century it was not the person of the Savior who was represented under the figure of the lamb, but that it was the faithful who were thus depicted,² either as the retinue of the Good Pastor, or enjoying the delights of Paradise after their salvation. This affords a satisfactory clew to the understanding of the Christian symbolism associated with our legend in Syria. The lambs attached with their umbilical cord to the ground are Christian devotees who still cling to earthly pleasures, Christians during their temporary passage or pilgrimage through this world. They are threatened by rapacious beasts, wolfish devils of temptation. The good shepherd guards his lambs by a protecting wall, but their final salvation must come through their own will and effort. The mounted and armored horsemen awakening and rousing them symbolize the Last Judgment.³ The connection of the lambs with this earth is severed, their earthly existence ceases, to be crowned by their resurrection and ultimate redemption in the Heav-

¹ M. Laurent, *L'Art chrétien primitif*, vol. i, p. 152; vol. ii, p. 162, and Plate LXIV, Fig. 3. A. N. Didron, *Christian Iconography*, vol. i, pp. 318-344. The Sixth Council of Constantinople forbade the representation of Christ as a lamb (O. M. Dalton, *Byzantine Art*, p. 158).

² Matthew xxv.32; John x.1-5. The notion is traceable to the Old Testament, where the people of God are styled his "sheep" (1 Kings xxii.17; Psalms Lxxix.13; Lxxx.1).

³ Compare Revelation ix.17 (the armored horsemen) and viii.6 (the trumpet-blowing angels). The concatenation of the lambs with Judgment was presumably elicited or at least supported by the passage in Jeremiah (xxiii.3-5): "And I will gather the remnant of my flock out of all countries whither I have driven them, and will bring them again to their folds; and they shall be fruitful and increase. And I will set up shepherds over them which shall feed them: and they shall fear no more, nor be dismayed, neither shall they be lacking, saith the Lord. Behold, the days come, saith the Lord, that I will raise unto David a righteous Branch, and a King shall reign and prosper, and shall execute judgment and justice in the earth."

only Kingdom. "They set out for water and pasture"¹ is the symbolical expression for the salvation, the water in the Christian sense denoting the communion of faith and the eternal kingdom of God. It is not known to me whether a Christian tradition of such a form really existed in Syria;² but the reconstruction here attempted is justifiable in itself, in order to do full justice to the Chinese version of the story. The Christian element and tendency are a necessary postulate, without which its fundamental features cannot be understood. It is most striking that this story opens in a sober manner, as though it were its only purport to describe a useful domestic animal of Fu-lin; not a word, however, is said about the utilization of any product of this animal, and we should certainly expect to hear at least what is done with the wool. Consequently the question is not here of a commercial proposition; at least, the Syrians who transmitted the tradition to the Chinese were not interested in this side of the matter, but solely in the peculiar life-story of the lambs, so that we are fully entitled to regard it as an allegory, and to seek its origin in the tenets of their Christian creed. The modification of the sheep into lambs, the cuirassed cavaliers, the water and pasture, and the Talmudic "man of the mountain," are unmistakable features characteristic of Christian notions. There is, further, a negative criterion pointing in the same direction: there was a sentence closing the story, the significance of which was either variable or vacillating in Syria, or not fully grasped by the Chinese interpreter. The recension of Chang Shou-tsie makes the lambs form a gregarious company after their release. In the redaction of the New T'ang Annals, compiled by Ngou-yang Siu in 1060, it is denied that they are able to form herds; while Tuan Kung-lu in his "Pei hu lu" (875), and Liu Hü in the "Old History of the T'ang Dynasty" (934), apparently embarrassed over this dilemma, dodged this point. Sheep are naturally gregarious animals; but for this very

¹ Compare Psalms xxiii. 1, 2: "The Lord is my Shepherd; I shall not want. He maketh me to lie down in green pastures: He leadeth me beside the still waters."

² Such allegories, however, were quite in keeping with the spirit of that time. Basilus the Great, whom we cited on the pinna, for instance, illustrated the doctrine of resurrection from the life-story of the silkworm: "What have you to say, who disbelieve the assertion of the Apostle Paul concerning the change at the resurrection, when you see many of the inhabitants of the air changing their forms? Consider, for example, the account of the horned worm of India, which, having first changed into a caterpillar, then in process of time becomes a cosoon, and does not continue even in this form, but assumes light and expanded wings. Ye women, who sit winding upon bobbins the produce of these animals, namely the threads, which the Seres send to you for the manufacture of fine garments, bear in mind the change of form in this creature; derive from it a clear conception of the resurrection; and discredit not that transformation which Paul announces to us all" (J. Yates, *Textrinum Antiquorum*, p. 215). Again, it is interesting that Basilus, who appears to have known the silkworm only from books and by report, copied his description of it chiefly from Aristotle's account (*Hist. anim.*, v, 19).

reason I am not inclined to believe that the Syrian original version, with its wondrous and supernatural tendency, should have terminated in such a platitude. On the contrary, it is my impression that the Syrians did say that these extraordinary lambs, quite at variance with the common kind, did not assemble into flocks; that means, in Christian speech, the self-responsibility of the individual, and the obligation to his personal endeavor toward the path of redemption.

In the Mongol period we have a much debased version of our story from Ch'ang Tê, who was sent by Mangu Khan in 1259 to his brother Hulagu, King of Persia, and who describes the "sheep planted on hillocks" (*lung chung yang*) as a product of the countries of the Western Sea (*Si Hai*) as follows:¹ "The umbilical cord of a sheep is planted in the soil and watered. At the time of the first thunder-peals it begins to grow, while the cord still remains connected with the ground. When full-grown, they are frightened by the sounds of wooden instruments: the cord breaks off, and the animal roams around to feed on the herbage. In autumn the sheep can be eaten, and there are seeds, to be used for planting, contained in its navel." Ch'ang Tê must have overheard this story in Persia. Certainly it is not a further Chinese development, but one of Arabo-Persian origin; certainly, also, it does not refer to any product, animal or vegetal, of western Asia, but merely represents a literary outgrowth of the older Fu-lin legend sensually deteriorated in the popular mind.

The section of the cyclopædia T'u shu tsi ch'êng entitled "Earth-Born Sheep" (already quoted) gives the following extract from the "Wu ts'ê yüan ying tsi:"² "As regards the earth-born sheep of the Western Regions, a vertebra of the neck is taken and planted in the soil. On hearing the sounds of thunder, the kid is generated out of this bone. When frightened by horsemen, its umbilical cord is severed. Its skin can be utilized as a mattress. Another account has it that the people north of Mo³ plant the horns of sheep, whereby is engendered an animal of the size of a hare, fat and beautiful. The report is rather strange, and it is not ascertained what kind of fruit it is which is planted by those people. Though what Liu Yu⁴ relates may be correct, yet it remains a mystery. Indeed, it is a marvel and subtlety of nature." It is evident that in the Mongol period the interest shifted in a certain measure and largely centred around the cause leading to the germination of the curious zoöphyte.

¹ Compare Bretschneider, *Mediæval Researches*, vol. i, p. 154.

² Apparently identical with the *Yüan ying tsi*, — writings of Wu Lai of the *Yüan* period (Bretschneider, *Bot. Sin.*, pt. 1, p. 214, No. 1125).

³ *Mo pei jên*. We have to read perhaps "Sha-mo" (the desert of Gobi), or, as another text cited by Schlegel (*l.c.*, p. 25) has it, "Ta-mo."

⁴ Editor of the *Si shi ki*, — the memoirs of the journey of Ch'ang Tê, whose account has been given above.

During the fourteenth century the legend of the Syrian Lamb appeared in the diaries of European travellers. Odoric of Pordenone, who started on his journey between 1316 and 1318 and returned in 1330 (he died in January of the ensuing year), tells of very large melons growing in the Caspean Mountains in the kingdom Cadeli; and when these be ripe, they burst, and a little beast is found inside like a small lamb, so that they have both melons and meat.¹ Sir John Mandeville (or Maundeville), who travelled in Asia from 1322 to 1356, has the same report about gourd-like fruits which when ripe are cut, and disclose within a little beast in flesh, bone and blood, as though it were a little lamb. Men eat both the fruit and the beast, and this is a great marvel. The traveller assures us that he himself has eaten of this fruit. These trivial and puerile stories gave rise in Europe to numerous wild speculations in regard to a Scythian lamb of vegetal origin, growing on trees, as may be read in the monograph of H. Lee, "The Vegetable Lamb of Tartary: a Curious Fable of the Cotton Plant" (London, 1887). This work, though of considerable merit and not devoid of critical ability, is a failure in its main tendency, which is to prove that it was the cotton-plant which caused the origin of the story of the vegetable lamb.² True it is that in the European versions (and only these are taken into account by Lee) a reminiscence of cotton-pods bursting forth and laying bare the white cotton wool is alive; this, however, is not the origin, but the ultimate result, the most recent adjustment of the story, the antecedents of which must be connected with the Fu-lin traditions of the earth-born lamb. Even without the knowledge of these, Lee's conclusion could not be upheld. Years ago, when I first read his treatise without having access to the chain of Chinese texts, it did not prove convincing to me. It is inconceivable that in the fourteenth century, when cotton and the manner of its production were perfectly known in Asia and Europe, any such abstruse fable should have arisen in regard to cotton. The Indian cotton-plant became intimately familiar to the classical world, thanks to Alexander's campaign;³ and I do not know that it ever became the object of fables in India, China, Greece, or Rome,⁴ or in Syria, or among the Arabs.

¹ Yule, *Cathay* (new ed. by H. Cordier, vol. ii, p. 240).

² Lee was not the first to make this suggestion; for Yule, in a note of his *Cathay* (vol. ii, p. 242), remarks that Erman thinks the whole story a mythical view of the cotton-plant.

³ Compare H. Bretzl, *Botanische Forschungen des Alexanderzuges*, pp. 136-139.

⁴ H. Lee (*l.c.*, p. 46) makes a case of the passage in Herodotus (III, 106), who is the first Western author to mention Indian cotton, and says, "There are trees growing wild there, the fruit of which is a wool exceeding in beauty and goodness that of sheep." This certainly means nothing at all, particularly not with reference to the story of a vegetable lamb appearing in Europe as late as the fourteenth century. Herodotus, who merely compares cotton with sheep's wool, cannot be made responsible for a legend that is brought home in the middle ages from some dark corner of Asia. It is the history and the transformation of this legend which must be studied with critical methods. No philologist,

The Chinese of the sixth century, and assuredly of the T'ang period, knew very well what the cotton-plant and its products were;¹ and neither is there in the Chinese documents regarding cotton any reference to lambs, nor is there the slightest allusion to cotton in the Ta Ts'in and Fu-lin texts regarding the water-sheep and the earth-born lamb. The two groups of traditions are most clearly differentiated, and offer absolutely no point of contact.

The European mediæval fables are intelligible only when we read them together with the earlier traditions of the Chinese. Both Odoric and Mandeville reported their stories as coming from a certain part of Asia, and the mutual resemblance of these is close enough to arouse the suspicion that one copied the other; but this point is not of importance to me. The point to be emphasized is that their stories are the worthy counterpart of those prosaic and grossly materialized versions which we encountered among the Chinese of the Mongol period, and which are contemporaneous with Odoric and Mandeville, when the spiritual drift of the sacred Syrian allegory had long sunk into oblivion. Of course, the Chinese are not guilty of this sacrilege, but Persians and Turks, and that host of minor tribes composing the Western empire of the Mongols. Yule has identified the Caspian Mountains of Odoric with Mount Kasbin, about eighty miles due south of the Caspian Sea, in Persian territory near Teheran. Ch'ang Tê, as noticed, recorded his version of the story in Persia on his mission to Hulagu. Odoric's agreement with Ch'ang Tê proves that both have reproduced with tolerable correctness a bit of folk-lore picked up by them on Persian soil. The Persians were interested in the edibility of the lamb, and are duly seconded by Odoric and Mandeville, who have both lamb and fruit consumed. These people were interested in the material birth of the lamb, which they explained as growing from a seed planted in the ground. Accordingly it was a cultivated plant, bearing the lamb as a fruit, and raised anew every year; and this tradition again is echoed by the European mimics. The only novel features reported by the latter, and not yet revealed by a Chinese or other Oriental text, are the identification of this fruit with a melon, and the lamb harbored behind its rind.² Maybe both Odoric and Mandeville overheard the story from their informants in this manner; maybe they themselves

either, will subscribe to Lee's hypothesis (p. 50) that the word *μῆλον* used by Theophrastus for the capsule of the cotton-plant, because it means also "apple" and "sheep," might have contributed to convey, many centuries later, to readers of a dead language, an erroneous idea of fleeces that grow on trees.

¹ Compare the valuable notes of Hirth and Rockhill, *Chau Ju-kua*, p. 218; and Watters, *Essays on the Chinese Language*, p. 439.

² The strange combination of melon and cotton-plant may have as its *raison d'être* the phonetic similarity of the Persian words *kharbuz* or *kharbuza* ("water-melon") and *karbās* or *kirbāsa* ("cotton, muslin;" derived from Sanscrit *karṇāsa*).

are responsible for this assimilation having a remote flavor of the cotton-pod; but, on this assumption, we are forced to admit that one was forestalled by the other. The traditions of the Chinese have enabled us to study the development of the story in its various stages, from the beginning of the Christian era down to the thirteenth century, and to recognize its origin, growth, and significance. We have seen that it takes its birth from the pinna, and that the Aristotelian doctrine of the fusion of vegetal and animal characteristics, applied to the life-habits of the pinna, is the very germ, the protoplasm, so to speak, which has called into existence the West-Asiatic notion of a vegetal lamb. This vegetal lamb therefore was evolved from a marine mollusk, never from a plant, and least of all from the cotton-plant. For this reason Yule¹ was misguided in seeking for "the plant about which these fables have gathered," and in regarding it as a certain genus of fern. Animal figures shaped by the Chinese from the rhizome of a fern greatly stirred the imagination of scholars in the eighteenth and nineteenth centuries, and were believed to have yielded the basis for the so-called "Scythian lamb." It is the uncontested and great merit of H. Lee² to have utterly destroyed these scientific fables, which, as usual, are more colossal and more baffling than the fables themselves, whose mystery they try to solve.

Entirely baseless is the opinion of G. Schlegel,³ who, "after more than two years' study of the subject," as he avers, arrived at the result that "the Chinese have confounded two quite distinct things, — the cultivation of the cotton-plant⁴ and the training of the camel, — from both of which fine stuffs can be fabricated." I am unable to see the justification of either point. There is in the Chinese records no trace that could lead to the one or the other supposition. On the one hand, according to Schlegel, "the Chinese accounts of that part of western Asia are peculiarly exact, though often seemingly shrouded in ambiguous and vague descriptions." On the other hand, he asserts,⁵ "That the Chinese mistook the young dromedary or one-humped camel for a sheep, is not unnatural." The way in which Schlegel got at the camel from the sheep is a somewhat unusual one. There is no necessity of criticising it in detail, as no apprehension of an imitation of such methods need be entertained in our day.⁶

¹ Cathay, vol. ii, p. 241.

² *L.c.*, pp. 24-44.

³ "The Shui-yang," *l.c.*, p. 20.

⁴ This result he adopted from the work of Lee.

⁵ *L.c.*, p. 32.

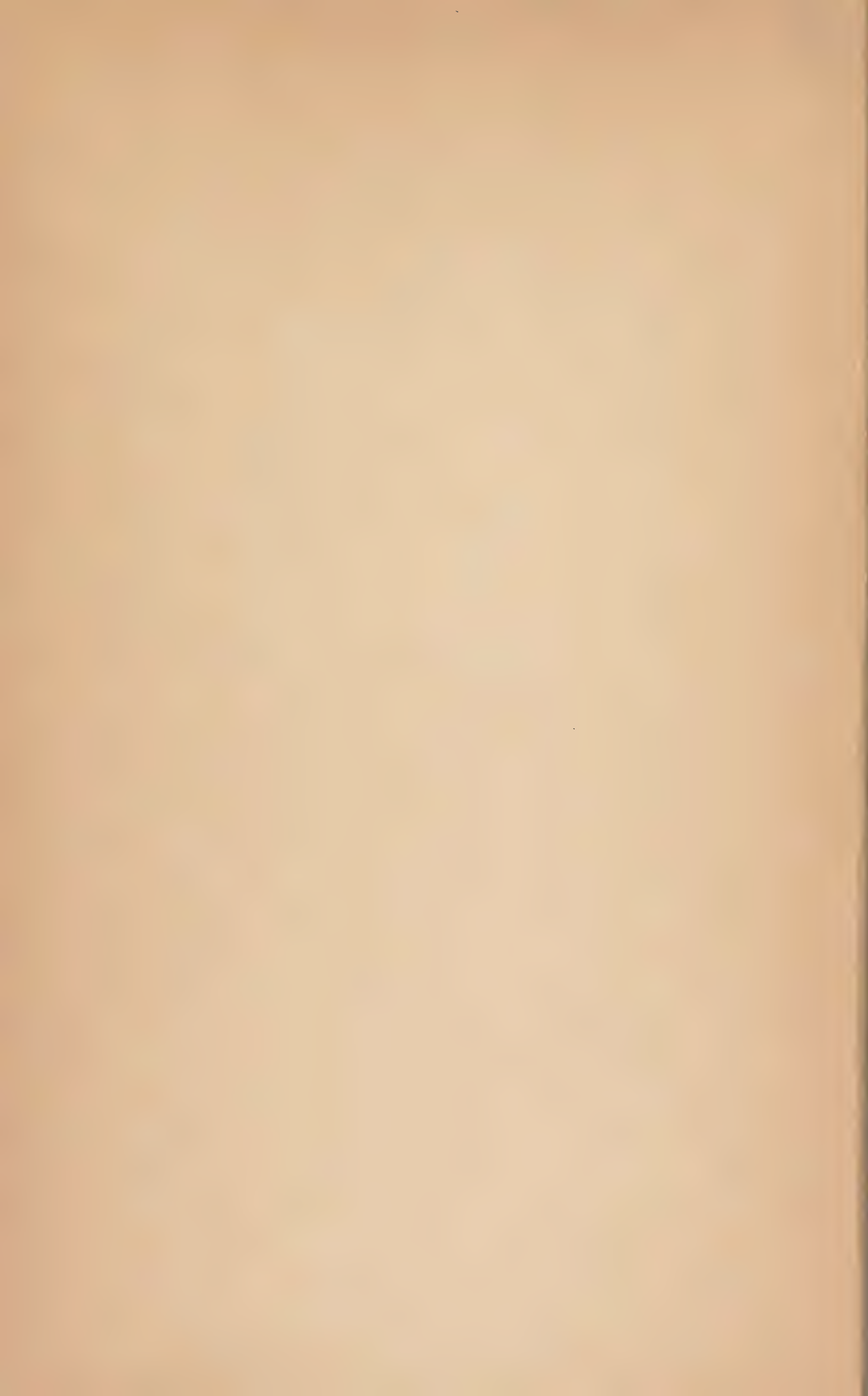
⁶ The sinological reader, however, should be aware of the fact that the germ of Schlegel's erroneous argumentation rests on a misunderstanding of a passage in Ma Tuan-lin (p. 30 of his paper), though he had the correct translation of Hirth (China and the Roman Orient, p. 80; but see p. 255; it is certainly impossible to make rugs from pinna fibres) before his

The case presented in the preceding investigation may offer several points of general interest to the scientific student of folk-lore. We are allowed to pursue the history of the legend of the pinna-lamb through the interval of a millennium and a half from the dormant, embryonic beginning of a seemingly unimportant natural fact to a full-fledged, complex wonder-story, making all Europe talk for many centuries, and keeping scientists and learned societies on the trot in search of the secret of the marvellous lamb. The theatre of action on which the development of the story was staged is western Asia, chiefly Syria. The irony of fate, however, has ruled that the principal documentary evidence in the case enabling us to trace the real history of the story is preserved in the records of the Chinese, whose masterly historical sense permits us to establish the accurate chronology in the various phases which the story has adopted within the course of a long run. Without this solid staff we should presumably, like blind men, grope in the dark. We clearly recognize three principal stages of development, — first, the nature-philosophical stage inaugurated by the submarine life of the pinna and the conception of its byssus as marine wool, which idea reacted on the mollusk and resulted in the construction of a water-sheep; second, the mystic and allegoric stage, introduced by the Aristotelian doctrine of floristic and faunistic intermediate forms, and shaped and consecrated by the symbolism of Christian philosophy; and, third, the degenerate, materialized, in the true sense of the word animalized, form of the story, turning up in China and Europe simultaneously in the thirteenth century. Greek sources were enlisted to corroborate and to substantiate the basis of the first stage; and they were found equally effectual in accounting for the primeval foundation of stage second. In other words, the accounts of the Chinese, which simply reproduce Western folk-lore

eyes. Schlegel understood that rugs, mats, carpets, and curtains were made of the wool of the water-sheep; and by assuming that the latter refers to cotton, and by wrongly arguing that rugs may be made of hair or wool but can hardly be made of cotton, he finally hits upon Persian stuffs of camel-hair, and lands from this airship ascent upon the camel itself. Ma Tuan-lin, of course, does not say that rugs are made of the wool of the water-sheep; but the matter relative to the rugs is a new paragraph and entirely distinct from the former. Very strange, also, is the objection of Schlegel (p. 29) raised to Lee's theory that "the cotton-plant was not cultivated in the country where the vegetable lamb grew, on the west side of the Volga, neither was it grown in Persia." If this be true, it would not speak against Lee's view, but, on the contrary, in favor of it; for if such a legend, as erroneously assumed by Lee, should ever have originated around the cotton-plant, it could most certainly have started only in a region where the cotton product was but dimly known and the plant itself was not cultivated. Contrary to the opinion of Schlegel, carpets and rugs can certainly be made of cotton, and in fact are so made, for instance, in India: the so-called *Suttringee* are manufactured entirely of cotton; in another kind the warp is of cotton, the woof is of wool (J. F. Watson, *Textile Manufactures and Costumes of India*, p. 143).

and bear no relation whatever to genuine or indigenous Chinese thought, are perfectly matched and elucidated by the analogous traditions cropping out in the West. In one important respect, however, the preceding investigation remains deficient: I have not been able to point out an exact Western parallel of the Christian parable, as which I endeavored, on strong internal evidence, to prove the Syrian version of the vegetal lamb. At this point I have to ask the friendly co-operation of scholars versed in Syriac or Arabic Christian literature, a field foreign to me, and I trust that the prototype of our legend will some day be discovered there. Any search in this direction was heretofore precluded at the outset, since the history of the legend had not yet adequately or correctly been represented. Indeed, the subject had been dealt with only within the narrow boundaries of sinology, and had never been brought to the attention of Semitists. If these students will become aware of the fact that it very properly belongs to their domain, the day will not be distant when we may hope for the ultimate solution of that single point which still remains to be settled.

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